

REFLECTIVE ELECTRICAL ENGINEERING LEARNING (REEL2026)

Building Skills and Professionalism through
Industrial Training

SKILLS



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Reflective
Electrical Engineering Learning

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BUILDING SKILLS AND PROFESSIONALISM THROUGH INDUSTRIAL TRAINING



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*"Building Skills and Professionalism
through Industrial Training"*

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*Reflection transforms
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Bridging Theory and Practice in Electrical Engineering Industrial Training

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Industrial training plays a vital role in allowing students of the Diploma in Electrical Engineering to learn and gain skills that are related to their field of study from the actual working environment. This article aims to provide a reflection on my experience in doing internship training with Kaifa Technology Malaysia Sdn. Bhd., an electronic manufacturing services company located in Bukit Mertajam, Penang. The internship is conducted from 16 March 2026 to 16 July 2026. Being trained under the facility department, I was exposed to numerous job roles ranging from simple daily electrical meter readings and equipment monitoring to breakdown troubleshooting and maintenance jobs. There were even occasions where I was asked to perform irrelevant job roles such as road painting and repairing door handles. This reflection article will highlight my experience in performing technical jobs such as daily main switchboard (MSB) meter readings for billing accuracy by Tenaga Nasional Berhad (TNB), and supported with compressor and chiller monitoring, electrical outlet repairs and Arduino-based alert system setup. Discussion will be provided on topics such as encountered technical difficulties, steps taken to overcome challenges, safety compliance, professionalism during training and longlife learning.

Facility Technician assigned many tasks to me under the assistance of the assistant engineer, the engineer and the senior engineer throughout my internship. The daily task that required more responsibility given to me was taking meter readings every day at 2:00 pm for the Main Switchboard (MSB) as shown in Figure 1. The readings were sent to TNB for billing purposes and record-keeping for future audits. It was an important task because it ensured that the bills generated by Tenaga Nasional Berhad (TNB) were accurate.



Figure 1: Taking Electrical Supply Readings on the MSB

In addition to the MSB values, I tracked compressor oil temperature and whether its cooler was running. The compressor provided compressed air which powered air guns throughout the factory floor. I also tracked a chiller that cooled production equipment. This activity is demonstrated in Figure 2.



Figure 2: Taking the Chiller Reading

Additionally, I helped the technicians troubleshoot machines by conducting insulation tests and current readings of the Residual Current Circuit Breaker (RCCB). I also assemble electrical outlets, replace ceiling lamps, change Air Handling Unit (AHU) filters, talk with vendors for minor jobs and pressured washed pipes using a water hose to de-ice nitrogen pipes. The process is depicted in Figures 3 and Figure 4.



Figure 3: Taking RCCB Voltage Reading During Machine Troubleshooting



Figure 4: Assembling an Electrical Outlet

On 1st April 2026, the TNB transformer low voltage side tripped. My responsibilities were to turn ON all the factory exhaust fans and all AHUs to maintain ventilation and prevent fire. Afterwards, my senior engineer also asked me to work on an Arduino project to design and build an alert system that will notify if the air conditioner located inside the server room fails and the temperature increases.

To carry out these tasks effectively, I utilized several essential tools and strictly followed safety procedures. Three tools I primarily used were a clamp meter to measure current, a test pen to check for voltage, and wire cutters. When entering compressor and chiller rooms, I was required to wear earmuffs as the noise level is hazardous to your ears. Each time I entered the production floor, I wore ESD safety shoes and ESD smock and cloth. This was to prevent static electricity from damaging sensitive electronic components, and it is also part of company safety standards. A good practice observed among technicians was verifying voltage using a test pen before touching any electrical terminal, even when the circuit was switched off. This simple precaution helps prevent electric shock. While performing these tasks with proper tools and safety measures, I also gained valuable practical insights that shaped my approach to real industrial work. Taking readings on chillers looked easy. Push the wrong button and you can reset or turn off the equipment. I learned that repeating yourself for training on how to do something the right way and double-checking every action can be necessary. I also learned that one mistake in the industry can stop a production line.

In addition to these observations, I also developed hands-on technical skills through repeated practice in basic electrical work. I know how to ratchet on a plug top. Learning how to make it look nice, safe, and professional took repetition. The technicians trained me how to strip wire to the perfect length, twist strands together, and tighten terminal screws without damaging the conductor. We can't learn psychomotor skills from a manual. Beyond electrical tasks, I was also exposed to various non-electrical responsibilities that are essential in facility maintenance. Hosing down an ice-filled nitrogen pipe took strength and form. Although this was not electrical-related, I understand that as a facility engineer, we can gain hands-on experience in tasks beyond electrical work to support and maintain production operations. These diverse experiences also shaped my attitude towards learning and working in an industrial environment. Ask the technicians when I didn't understand something, ask them to show me, and even read the warning labels on machinery. The biggest lesson I've learned is to ask questions, don't be afraid.

This experience emphasized the contrast between theoretical knowledge acquired during my studies and the practical demands of the industrial environment. Theory classes in my diploma programme had prepared me well for my studies but industrial training really opened my eyes up on how niche and oddly specific tasks can be in the real world. How do you search for the procedure to fill in MSB reading for TNB billing? It's not covered in any classes; we just must learn when we start working. How much coordination is needed when a transformer trip emergency happens and you need to turn on all exhaust fans and AHUs? We will only know if we work there and know where everything electrical distributors for your factory are.

In conclusion, my industrial training experience has significantly contributed to both my technical and personal development. My internship allowed me to change from an electronically studying student to a more practical, safety-aware, and flexible engineer. MSB readings every day, monitoring compressors and chillers, insulation testing, measuring

RCCB current, handling emergency situations during transformer trips, and developing an Arduino project have enhanced my technical skills that I can apply in the power and facility engineering field. I have learned to ask questions without hesitation, double-check voltage before handling electrical components, and remain open to non-electrical tasks as part of facility responsibilities. These are lessons that I will carry throughout my internship.

Authors' Biography



Irfan Naufal bin Ahmad Salehuddin pursuing Diploma in Electrical Engineering (Power) at Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang. During my study I work under internship at Kaifa Technology Malaysia Sdn Bhd from 16 March 2026 to 16 July 2026. Through the exposure of working in a manufacturing industry, it allowed me to gain more insights on my field of study which is concentrating on power system, facility management and embedded system. My career aspiration is to be a competent electrical engineer that can convert theory into practical product.



Siti Sarah binti Mat Isa has 15 years of teaching experience in power engineering field. She received MEng. In Power System and Electrical Energy from Universiti Malaya (UM) in 2011. Her current research interest are in power system transient and renewable energy specifically in battery energy storage system.

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